

Beutnagel 4-1-13-3

IN THE CLAIMS:

1. (Deleted)
2. (Deleted)
3. (Previously Deleted) .
4. (Previously Deleted).
5. (Previously Deleted).
6. (Previously Deleted).
7. (Previously Deleted).
8. (Previously Deleted).
9. (Previously Deleted).
10. (Previously Deleted).
11. (Previously Deleted).
12. (Deleted)
13. (Deleted)
14. (Deleted)
15. (Deleted)

Beutnagel 4-1-13-3

16. (Deleted)

17. (Deleted)

18. (Deleted)

19. (Deleted)

20. (Previously Amended) Apparatus comprising:

a decoder, responsive to an input signal comprising signals representing audio and embedded video synthesis command signals, that separates the command signals from the signals representing audio, and converts text signals found in said audio into phoneme signals, to develop thereby an audio signal stream and a first set of video synthesis command signals stream;

a converter for generating a second set of video synthesis command signals from said phoneme signals;

a speech synthesizer responsive to said audio signal stream for developing sound;

and

a video synthesizer responsive to said video synthesis command signals stream for developing images.

21. (Previously Added) The apparatus of claim 20 where said converter is interposed between said decoder and said video synthesizer, merging said command signals separated from said input signal with said command signals generated by said converter, to form a single stream of input-signal-related command signals that is applied to said video synthesizer.

22. (Previously Added) The apparatus of claim 21 where said converter generates additional command signals interposed between said input-signal-related command signals.

Beutnagel 4-1-13-3

23. (Previously Added) The apparatus of claim 20 where said video synthesis command signals are FAPs, and said video synthesis command signals generated by said converter are FAPs.

24. (Previously Added) The apparatus of claim 23 where said video synthesis command signals generated by said converter are members of the FAP 1 parameter.

25. (Previously Added) The apparatus of claim 23 where said video synthesis command signals generated by said converter are members of the FAP 1 parameter or FAP3-68 parameters, inclusively.

26. (Deleted)

27. (Deleted)

28. (Deleted)

29. (Deleted)

30. (Deleted)

31. (Deleted)

32. (Deleted)

33. (Deleted)

34. (Deleted)

35. (Previously Deleted).

Beutnagel 4-1-13-3

36. (Deleted)

37. (Deleted)

38. (Deleted)

39. (Deleted)

40. (Deleted)

41. (Previously Amended) A method comprising the steps of:
receiving an input signal that comprises text signals representing audio and
embedded video synthesis command signals;
separating said input signal into an audio signal stream and a video synthesis
command signals stream;
converting said text signal stream into phonemes and synthesizing speech from
said phonemes, and
developing a plurality of additional command signals and interposing the
additional command signals into said video synthesis command signals stream to form a
combined command signals stream; and
synthesizing at least one image from said video synthesis command signals
stream with aid of a FAP-based face model;
where said step of developing develops a set of said additional command signals
between each pair of said command signals of said combined command signals stream,
and said set of additional command signals interpolated between said pair of said
command signals of said combined command signals stream; and
where said interpolation is in accord with a function of order greater than 2.

42. (Previously Amended) The method of claim 41 where said interpolation is
in accord with a function of order 4.

Beutnagel 4-1-13-3

43. (Deleted)

44. (Deleted)

45. (Deleted)

46. (Deleted)

47. (Deleted)

48. (Deleted)

49. (Deleted)

50. (Deleted)

51. (Deleted)

52. (Previously Amended) Apparatus comprising

a decoder/synthesize module that is responsive to an input stream that includes a text specification commingled with explicit FAP information, in the form of interspersed bookmarks, each conveying information about identity of a FAP and an ultimate state that the FAP reaches in accordance with a specified transition path, outputting a synthesized voice at a first output, and phonemes as well as said FAP information at a second output;

a converter responsive to said second output for generating a sequence of facial animation parameters;

face rendering module responsive to said converter; and

a compositor, responsive to said synthesizer and to said face rendering module;

where the transition path follows the equation $f(t) = a_x + (a - a_x)t$, where a_x is amplitude measure at beginning of transition, a is specified in said bookmark, and t is

Beutnagel 4-1-13-3

time, ranging between 0 and 1, or a transition path that involves higher powers of t or e raised to power t .

53. (Previously Amended) The apparatus of claim 52 where the transition path follows the equation $f(t) = a_s + (1 - e^{-t})(a - a_s)$, where a_s is amplitude measure at beginning of transition, a is specified in said bookmark, and t is time, ranging between 0 and 1.

54. (Previously Amended) The apparatus of claim 52 where the transition path follows the equation $f(t) = a_s + \frac{(a - a_s)}{(1 - e^{-\lambda(t - FABdur/2)})}$, where a_s is amplitude measure at beginning of transition, a is specified in said bookmark, $FABdur$ is specified in said bookmark, λ is a specified parameter, and t is time, ranging between 0 and 1.

55. (Previously Amended) The apparatus of claim 52 where the transition path follows the equation $f(t) = a_s + (2t^3 - 3t^2 + 1) + (-2t^3 + 3t^2)a + (t^3 - 2t^2 + t)g_s$, where a_s is amplitude measure at beginning of transition, a is specified in said bookmark, g_s is a specified parameter, and t is time, ranging between 0 and 1.

56. (Previously Amended) The apparatus of claim 52 where the FAP amplitude transition path follows the equation $FAP_{amp}(t) = startVal(2t^3 - 3t^2 + 1) + FAPval(-2t^3 + 3t^2) + startTan(t^3 - 2t^2 + 1)$, where $startVal$, $FAPval$, and $startTan$, are specified constants.

57. (Deleted)

58. (Deleted)

59. (Deleted)

Beutnagel 4-1-13-3

60. (Deleted)

61. (Deleted)

62. (Deleted)

63. (Deleted)

64. (Deleted)

65. (Deleted)

66. (Previously Amended) A method comprising the steps of:

receiving an input that includes a text specification commingled with explicit FAP information in the form of interspersed bookmarks, each conveying information about identity of a FAP and an ultimate state that the FAP reaches in accordance with a specified transition path, outputting a synthesized voice at a first output, and phonemes as well as said FAP information at a second output

generating a sequence of facial animation parameters from signals of said second output;

rendering images from output signals developed by said step of generating; and combining said synthesized voice and said images;

where the transition path follows the equation $f(t) = a_s + (a - a_s)t$, where a_s is amplitude measure at beginning of transition, a is specified in said bookmark, and t is time, ranging between 0 and 1, or a transition path that involves higher powers of t or e raised to power t .

67. (Previously Amended) The method of claim 66 where the transition path follows the equation $f(t) = a_s + (1 - e^{-t})(a - a_s)$, where a_s is amplitude measure at

Beutnagel 4-1-13-3

beginning of transition, a is specified in said bookmark, and t is time, ranging between 0 and 1.

68. (Previously Amended) The method of claim 66 where the transition path follows the equation $f(t) = a_s + \frac{(a - a_s)}{(1 - e^{-\lambda(t - FABdur/2)})}$, where a_s is amplitude measure at beginning of transition, a is specified in said bookmark, $FABdur$ is specified in said bookmark, λ is a specified parameter, and t is time, ranging between 0 and 1.

69. (Previously Amended) The method of claim 66 where the transition path follows the equation $f(t) = a_s + (2t^3 - 3t^2 + 1) + (-2t^3 + 3t^2)a + (t^3 - 2t^2 + t)g_s$, where a_s is amplitude measure at beginning of transition, a is specified in said bookmark, g_s is a specified parameter, and t is time, ranging between 0 and 1.

70. (Previously Amended) The method of claim 66 where the FAP amplitude transition path follows the equation

$FAPamp(t) = startVal(2t^3 - 3t^2 + 1) + FAPval(-2t^3 + 3t^2) + startTan(t^3 - 2t^2 + 1)$, where $startVal$, $FAPval$, and $startTan$, are specified constants.